REMARKS

A reconsideration is respectfully requested of Claims 1 and 2.

Claims 1 and 2 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over

U.S. Patent No. 3,118,015 to *Willyoung* and further view of *In re Aller*.

The disclosed embodiment of the present invention pertains to a stator winding bar

for an electrical machine. A plurality of strands are arranged in stacks on top and next to

each other. An active part extends along a winding slot of the stator laminated core. The

active part is adjoined on each of both sides by an end winding. The active part is divided

in length into a central middle part and two border zones of equal length enclosing the

central middle part. The strands of the stator winding bar are transposed in the active part

according to the manner of a Roebel bar with each other by approximately 450°, of which

270° are on the middle part and 90° each are on the two border zones, while the strands in

the end windings extend without transposition parallel to each other. For the compensation

of the external fields that act in the region of the end winding and induce circulating

currents, the middle part of the active part has a length that is greater than 3/4 of the total

length of the active part. None of the prior art of record disclose these patentable features.

In particular, the Examiner seeks to rely on the disclosure of *Willyoung* for

disclosing the features of independent Claim 1. However, *Willyoung* does not disclose the

patentable features of independent Claim 1. *Willyoung* was specifically addressed in the

Background of the Invention of the present application. In particular, *Willyoung* shows in
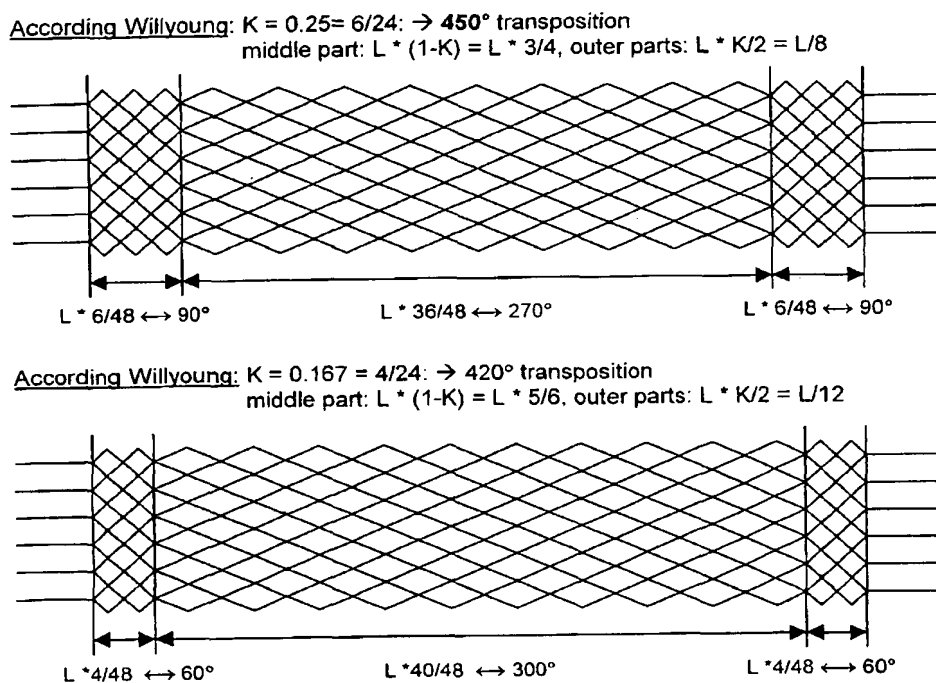
figure 3 (not in figure 5) the so called 450° transposition. It consists of two outer parts of

the same length of 1/8 of the active part and a center part of a length of 3/4 of the active

part. This is one of the possible solutions given by *Willyoung* according to his formulation

which says that the total length of the active part is divided into 3 parts. These are 2 end

parts of the same length equal to $\dfrac{l*k}{2}$ and a transposition angle of k * 360° and a center

part of a length of (1-k)*1 and a transposition angle of (1-k)*360°. This means that the

center part has a specific transposition angle of $\dfrac{(1-k)*360°}{(1-k)*l} = \dfrac{360°}{l}$, which is exactly the

same value as given in the original simple 360° transposition of L. Roebel of 1912. The

outer parts have a specific transposition angle of $\dfrac{k*360°}{k*1/2} = \dfrac{720°}{l}$, which is exactly twice as

much as in the center part.

To conclude, any solution given by *Willyoung* consists always of the same two

different specific transpositions, i.e. $\dfrac{360°}{l}$ and $\dfrac{720°}{l}$. No other specific transposition is

included in *Willyoung*. This means also that the active part is totally compensated

electromagnetically within its length but the end winding field is never compensated totally.

Either there remains an uncompensated part of the proximity effect (e.g. 450°

transposition), an uncompensated part of the skin effect, or both effects are only partly

compensated (transposition angles of >360° and <720°, not 450° and not 540°).

The present invention deals with a solution in which the specific transpositions do

not obey the rules of *Willyoung* for the 450° transposition. In particular, the outer parts

show a specific transposition of more than $\dfrac{720°}{l}$ (parts shorter) and the center part shows

one of less than $\dfrac{360°}{l}$ (part longer). The advantage is that one gets the opportunity to

compensate fully the proximity effect of the magnetic field in the end winding zones.

To further illustrate Applicant's point, presented below are two solutions according

to *Willyoung*.

According Willyoung: K = 0.25= 6/24: → **450°** transposition
middle part: L * (1-K) = L * 3/4, outer parts: L * K/2 = L/8

L * 6/48 ←→ 90°   L * 36/48 ←→ 270°   L * 6/48 ←→ 90°

According Willyoung: K = 0.167 = 4/24: → 420° transposition
middle part: L * (1-K) = L * 5/6, outer parts: L * K/2 = L/12

L *4/48 ←→ 60°   L *40/48 ←→ 300°   L *4/48 ←→ 60°

In the first case, the diagram demonstrates a 450° transposition and the second

example demonstrates a 420° transposition. As shown in the first example, in the case of a

450° transposition according to *Willyoung*, the middle part is 3/4 of the total length of the

active part. However, according the formula of *Willyoung*, the middle part can never be

greater than 3/4 of the total lengths. Example 2 shows a case where the middle part is

larger than 3/4 length, but this requires a transposition of 420°. Therefore, according to

the rules of *Willyoung*, the claimed combination of a transposition of 450°, of which 270° are on the middle part and 90° each are on the two border zones, and the middle part of the active part has a length that is greater than 3/4 of the total length of the active part cannot be obtained. Accordingly, *Willyoung* cannot be modified to obtain the patentable features of the present invention.

With regard to the Examiner's conclusion that it would have been obvious to one having ordinary skill in the art at the time the invention was made to determine a workable range forth stator winding bars, Applicant respectfully submits that this is not the case for the present matter. In particular, as described above, the claimed range of a 450° transposition and a middle part that is bigger than 3/4 of the length of the active part is not possible according to *Willyoung*. Accordingly, *Willyoung* fails to disclose the patentable features of independent Claim 1.

For at least the foregoing reasons, it is submitted that the stator winding bar of the present invention, as defined in independent Claim 1, and the claims depending therefrom is patentably distinguishable over the applied document. Accordingly, withdrawal of the rejections of record and allowance of this application are earnestly solicited.

Should any questions arise in connection with this application, or should the Examiner believe a telephone conference would be helpful in resolving any remaining

issues pertaining to this application, the undersigned respectfully requests that she be

contacted at the number indicated below.

Respectfully submitted,

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